

IN THE CLAIMS

1. (Currently Amended) A ~~diffraction~~Diffraction grating element (SG) arranged on or embedded within a ~~light-transmissive, light-transmissive~~ preferably planar waveguiding substrate (S) and arranged to interact with an incident light wave (W) in order to couple the energy from said incident light wave (W) into said substrate (S) to form at least one diffracted light wave (R_{-1}, R_{+1}) propagating within said substrate (S) and corresponding to at least one selected diffraction order, ~~characterized in that~~wherein the grating element (SG) is divided into at least two different grating regions ($BG_{left}, BG_{right}, MBG_{left}, MBG_{right}$) each having different diffractive properties and arranged on opposite sides respect to a transition point (TP) to form a splitted grating element, where the diffractions generated by said at least two different grating regions ($BG_{left}, BG_{right}, MBG_{left}, MBG_{right}$) are arranged to mutually compensate for the for a variation in the input angle (θ) of the incident light wave (W) to the to a total diffraction efficiency of the at least one diffracted light wave (R_{-1}, R_{+1}) propagating within said ~~substrate (S).~~substrate.

2. (Currently Amended) The diffractive grating element (SG) according to the claim 1, ~~characterized in that~~wherein in said splitted grating element (SG) ~~the grating a grating~~ profile of at least one of the grating regions ($BG_{left}, BG_{right}, MBG_{left}, MBG_{right}$) ~~has~~has an asymmetric period profile, preferably ~~blazed~~a blazed period profile.

3. (Currently Amended) The diffractive grating element (SG) according to the claim 1, ~~characterized in that~~wherein said splitted grating element (SG) is arranged to be symmetrically splitted, i.e. ~~the that is, the~~ element comprises two grating regions (BG_{left}, BG_{right}) ~~whose having~~ grating period profiles are arranged to be arranged as substantially mirror images of each other with respect to transition point (TP).a transition point.

4. (Currently Amended) The diffractive grating element (SG) according to the claim 1, ~~characterized in that~~wherein said splitted grating element (SG) comprises at least two grating regions (BG_{left}, BG_{right}) ~~whose having~~ grating period profiles are arranged to ~~have~~with substantially different depths.

5. (Currently Amended) The diffractive grating element-(SG) according to the claim 1, ~~characterized in that~~wherein in said splitted grating element-(SG) the diffraction efficiency of at least one of the grating regions-(BG_{left} , BG_{right} , MBG_{left} , MBG_{right}) is arranged to vary at different local distances measured from the transition point (TP)-point.

6. (Currently Amended) The diffractive grating element-(SG) according to the claim 1, ~~characterized in that~~wherein the transition point-(TP) is ~~arranged to be~~ located within ~~the area~~an area where the incident light wave-(W) first interacts with the splitted grating element-(SG)-element.

7. (Currently Amended) The diffractive grating element-(SG) according to the claim 1, ~~characterized in that~~wherein ~~the first~~ a first interaction of the incident light wave (W) with the splitted grating element-(SG) is arranged to take place substantially within a single grating region-(MBG_{right})-region.

8. (Currently Amended) The diffractive grating element-(SG) according to the claim 7, ~~characterized in that~~wherein at least one of the grating regions-(MBG_{left}) is arranged to redirect or recirculate the light wave waveguided within the substrate-(S) back ~~towards~~towards a reverse direction inside the ~~substrate (S)~~-substrate.

9. (Currently Amended) The diffractive grating element-(SG) according to the claim 1, ~~characterized in that~~wherein the splitted grating element-(SG) is arranged to enlarge ~~the exit~~an exit pupil of an optical system.

10. (Currently Amended) The diffractive grating element-(SG) according to the claim 1, ~~characterized in that~~wherein the splitted grating element-(SG) is arranged to enlarge ~~the exit~~an exit pupil of a biocular or monocular optical system.

11. (Currently Amended) The diffractive grating element-(SG) according to the claim 1, ~~characterized in that~~wherein the splitted grating element-(SG) is arranged to enlarge ~~the exit~~an exit pupil of a virtual display.